इंटरनेट मानक

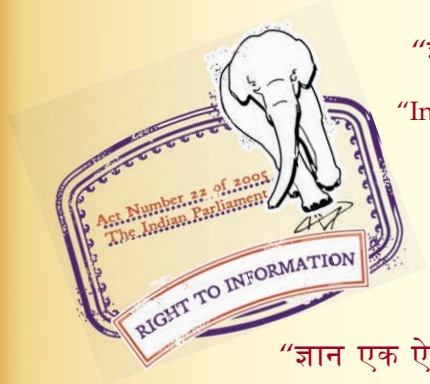
Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 6022 (1994): Fast Green FCF, Food Grade [FAD 8: Food Additives]



"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

IS 6022 : 1994
(Reaffirmed 1999)

भारतीय मानक

गहरा हरा एफसीएफ, खाद्य ग्रेड — विशिष्टि

(दूसरा पुनरीक्षण)

Indian Standard

FAST GREEN FCF, FOOD GRADE — SPECIFICATION

(Second Revision)

First Reprint DECEMBER 1995

UDC 664·099·6 : 667·283·4-124

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

October 1994

Price Group 2

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Food Additives Sectional Committee had been approved by the Food and Agriculture Division Council.

This standard is one of a series of Indian Standards on synthetic food colours permitted under the *Prevention of Food Adulteration Rules, 1955* issued by the Ministry of Health, Government of India. These rules, *inter-alia* prescribe:

> 'All food colours including natural colouring matter and permitted synthetic food colours and their preparations or mixtures excluding saffron and curcumin shall be sold only under the BIS Certification Mark.'

'Indian Standard specification for fast green FCF' (IS 6022 : 1971) was first issued in 1971. It was revised in 1977 to bring it in line with the FAO/WHO specifications and also taking into account the indigenous data generated. This standard is being revised taking into consideration the latest specification for the food coloured issued by FAO/WHO [*see* FAO Food and Nutrition Paper 37 (1986) 'Specification for identity and purity of certain food additives'], latest specifications laid down under Food Chemical Codex, EEC Directives, Canadian Food Laws, Food and Drugs Act of USA. In addition, due consideration has been given to the indigenous data.

In this revision the maximum requirement of loss on drying at 135°C and chloride and sulphate expressed as sodium salt has been decreased. Limits for organic compounds other than colouring matter, chromium, mercury and heavy metals have been added in line with the International requirements.

While formulating this standard, necessary consideration has been given to the *Standards of Weights and Measures (Packaged Commodities) Rules*, 1977. The standard is, however, subject to restrictions imposed under these Rules wherever applicable.

Fast green FCF is hygroscopic in nature and its shade changes with different *p*H. Suitable precautions should, therefore, be taken in packing the colour.

Colour fast green FCF is described below:

Common Name — Fast green FCF.

Synonyms — C.I. Food Green 3, FD and C Green No. 3. Vert Solide FCF.

Class — Triarylamethane.

Colour — Green.

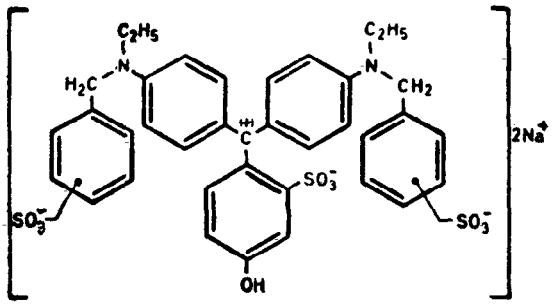
Colour Index — (1975) No. 42053.

Chemical Name — Disodium salt of 4 - [{ 4 - (N - ethyl - p - sulfobenzyl - amino) - phenyl } - (4 - hydroxy - 2 - sulphonumphenyl) - methylene] - { 1 - (N - ethyl - N - p - sulphobenzyl) - Δ 2, 5 - cyclohexadienimine }.

Empirical Formula — $C_{37}H_{34}O_{10}N_2S_3Na_2$.

Molecular Weight — 808·86.

Structural Formula



(*Continued on third cover*)

Indian Standard

FAST GREEN FCF, FOOD GRADE — SPECIFICATION

(Second Revision)

1 SCOPE

1.1 This standard prescribes requirements and methods of sampling and test for fast green FCF, food grade.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard :

IS No.	*Title*
1070 : 1992	Reagent grade water (*third revision*)
1699 : 1994	Methods of sampling and test for food colours (*second revision*)
2491 : 1972	Code for hygienic conditions for food processing units (*first revision*)

3 REQUIREMENTS

3.1 The material shall conform to the requirements prescribed in Table 1.

3.2 Freedom from Contaminants

The material shall be free from aromatic amines, aromatic nitrocompounds, aromatic hydrocarbons, and cyanides.

3.3 The product shall be processed, packed, stored and distributed under hygienic conditions in licenced premises (*see* IS 2491 : 1972).

4 PACKING AND MARKING

4.1 Packing

The material shall be packed in glass containers, metal containers, polyethylene containers or cardboard containers suitably lined with polyethylene. Subject to agreement between the purchaser and the vendor, other suitable containers may also be used.

4.2 Marking

4.2.1 Each container shall be legibly and indelibly marked with the following information:

a) The word's 'FOOD COLOUR';
b) Common name of the colour;
c) Chemical name of the colour;
d) Colour index number;
e) Source of manufacture;
f) Date of manufacture;
g) Net mass in grams or kilograms;
h) Batch or code number;
j) Names of the major dye intermediates present; and
k) Any other requirements as specified under the *Standards of Weights and Measures (Packaged commodities) Rules, 1977/Prevention of Food Adulteration Rules, 1955.*

4.2.2 *BIS Certification Marking*

The product may also be marked with the Standard Mark.

4.2.2.1 The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5 SAMPLING

5.1 Representative samples of the material for tests shall be drawn and criteria for ascertaining conformity to the requirements of this specification shall be determined according to the method prescribed in **4** of IS 1699 : 1994.

6 TESTS

6.1 Tests shall be carried out as prescribed in col **4** and **5** of Table 1.

6.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1992) shall be employed in tests.

NOTE – 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the test results.

Table 1 Requirements for Fast Green FCF, Food Grade

(*Clause* 3.1)

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of this Standard	Ref to Clause of IS 1699 : 1994
(1)	(2)	(3)	(4)	(5)
i)	Total dye content, corrected for sample dried at 105 ± 1°C for 2 h, percent by mass, *Min*	85	A	–
ii)	Loss on drying at 135°C, percent by mass, *Max*	13	–	6
	and			
	Chlorides and sulphates expressed as sodium salt, percent by mass, *Max*		– –	13 14
iii)	Water-insoluble matter, percent by mass, *Max*	0.2	–	7
iv)	Combined ether extracts, percent by mass, *Max*	0.2	–	8
v)	Subsidiary dyes, percent by mass, *Max*	1.0	B	9
vi)	Organic compound other than colouring matter, uncombined intermediates and products of side reactions :			
	a) Sum of 2-, 3-, 4- formyl benzene sulphonic acid, sodium salt, percent by mass, *Max*	0.5	C	–
	b) Sum of 3- and - 4- [ethyl (4-sulfophenyl) amino] methyl benzene sulphonic acid, disodium salt, percent by mass, *Max*	0.3	C	–
	c) 2-formyl-5-hydroxybenzene sulphonic acid, sodium salt, percent by mass, *Max*	0.5	C	–
	d) Leuco base, percent by mass, *Max*	5.0	C	–
	e) Unsulphonated primary aromatic amines (calculated as aniline), percent by mass, *Max*	0.01	–	11
vii)	Lead, mg/kg, *Max*	10	–	15
viii)	Arsenic, mg/kg, *Max*	3	–	15
ix)	Chromium, mg/kg, *Max*	50	–	15
x)	Mercury, mg/kg, *Max*	absent	–	15
xi)	Heavy metals, mg/kg, *Max*	40	–	16

ANNEX A

[*Table* 1, *Item* (i)]

DETERMINATION OF TOTAL DYE CONTENT

A-0 GENERAL

A-0.1 Two methods, spectrophotometric method and the titanium trichloride method are prescribed. In case of dispute, spectrophotometric method shall be regarded as reference method.

A-1 SPECTROPHOTOMETRIC METHOD

A-1.1 Apparatus

Suitable spectrophotometer with properly calibrated scale for both wavelength and optical density. However, suitable spectrocolorimeter properly calibrated against a spectrophotometer may also be used.

A-1.2 Reagents

A-1.2.1 *Ammonium Acetate Solution*

200 mg of ammonium acetate in one litre of water (re-distilled).

A-1.3 Procedure

Weigh accurately about 100 mg of the dye sample and dissolve with ammonium acetate solution in a 250-ml volumetric flask. Dilute this with the same solvent to make a final concentration of 0.2 mg per 100 ml (approximately). Find out the optical density of this diluted solution against ammonium acetate solution as blank at 625 nm in a glass cell with 10.0 mm light path.

A-1.3.1 Simultaneously weigh accurately about 2 g of the dye sample and dry this in an air-oven at 105 ± 1°C for 2 hours. Calculate the loss of mass on drying; and from this data calculate the dry mass of the sample *(M)* in the final solution taken for measurement of the optical density.

A-1.4 Calculation

$$\text{Total dye content in the sample, percent by mass} = \frac{OD \times 100}{M \times 1\,560}$$

where

OD = optical density found;

M = dry mass of the sample in 100 ml of solution; and

1 560 = $E^{1\%}_{1\text{ cm}}$, 625 nm for fast green FCF in ammonium acetate solution.

A-2 TITANIUM TRICHLORIDE METHOD

A-2.1 Procedure

The method given in **5** of IS 1699 : 1994 shall be followed. The percentage of total dye content shall be determined using the following conditions:

1 ml of 0.1 N titanium chloride ($TiCl_3$) = 0.040 44 g of Fast Green FCF

ANNEX B

[*Table 1, Item* (v)]

DETERMINATION OF SUBSIDIARY DYES

B-1 PROCEDURE

The method given in **9** of IS 1699 : 1994 using the conditions given below shall be followed:

Developing solvent : No. 4

Height of ascent of solvent front : approximate by 12 cm

ANNEX C

[*Table* 1, *Item* (vi)]

DETERMINATION OF ORGANIC COMPOUNDS OTHER THAN COLOURING MATTER

C-1 PROCEDURE

C-1.1 The method given in **10** of IS 1699 : 1994 using the following absorptivities shall be used:

3-formyl benzene sulphonic acid	0.495 mg/L/cm at 246 nm in dilute HCl.
3-[(ethyl) (4-sulfophenyl) amino] methyl benzene sulphonic acid	0.078 mg/L/cm at 277 nm in dilute ammonia
2-formyl-5-hydroxy-benzene sulfonic acid	0.080 mg/L/cm at 335 nm in dilute ammonia.

C-1.2 Leuco Base

Weigh accurately 130 ± 5 mg of sample and proceed as directed under **12** of IS 1699 : 1994 :

Absorptivity (a) = 0.156 mg/L/cm at approximately 625 nm

Ratio = 0.971 2

(*Continued from second cover*)

Solubility — Soluble in water.
Sparingly soluble in ethanol.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Additions'.

This Indian Standard has been developed from Doc No. FAD 8 (261).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all offices)

Regional Offices :		Telephone
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	331 01 31 331 13 75
Eastern	: 1/14 C. I.T. Scheme VII M, V. I. P. Road, Maniktola CALCUTTA 700054	37 84 99, 37 85 61 37 86 26, 37 86 62
Northern	: SCO 335-336, Sector 34-A, CHANDIGARH 160022	60 38 43 60 20 25
Southern	: C. I. T. Campus, IV Cross Road, MADRAS 600113	235 02 16, 235 04 42 235 15 19, 235 23 15
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) BOMBAY 400093	632 92 95, 632 78 58 632 78 91, 632 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. PATNA. THIRUVANANTHAPURAM.

Reprography Unit, BIS, New Delhi, India